

Planetary Radar

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This article reports on the radar astronomy activities supported by the Deep Space Network during the first quarter of 1981. The bodies observed include the asteroids Apollo and Toro, comet Bradfield, and the rings of Saturn.

The 64-meter Goldstone station utilizing S- and X-band high-power transmitters supported observations of the asteroids Apollo and Toro, comet Bradfield, and Saturn's rings during this period. Estimates of the amount of useable data acquired vs the total obtained reveal a preliminary success rate of approximately 50%.

The outstanding success has been the observation of the asteroid Apollo. Publication of these results is eagerly awaited. Continued observations of the asteroid Toro (see *TDA Progress Report 42-59, July-August 1980*) were not so

successful, due to a lack of updates in the ephemeris used for predictions. Radar Astronomy also suffered equipment failures, notably in the X-band transmitter. The other disappointment to report is the spectra obtained of comet Bradfield. These appear to be contaminated by other spectra, but the investigation is continuing in an attempt to extract the comet data. Fair-to-marginal detection of Saturn's rings at X-band was also achieved during this period. A particularly significant result of preliminary analyses is that the scattering function does not conform to any known theories or hypotheses and at this time remains undecipherable.